GATES LEARJET CORPORATION

maintenance manual

CHAPTER

35

OXYGEN

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OXYGEN - DESCRIPTION AND OPERATION

1. General
 A. The oxygen system consists of the crew distribution and passenger distribution systems, a high pressure storage cylinder, a direct reading pressure gage, a shutoff valve and pressure regulator assembly, an overboard discharge indicator, an oxygen aneroid switch, a manual aneroid bypass valve, an oxygen solenoid valve and a manual passenger oxygen valve.

2. Description
 A. Crew Distribution System
 (1) The crew distribution system is installed to provide oxygen in the event of pressurization system failure or for flight altitudes that require oxygen masks to be worn at all times. The crew masks are connected to quick-disconnects. Oxygen flow is available at all times.
 B. Passenger Distribution System
 (1) The passenger distribution system is installed to provide oxygen in case of pressurization system failure or any other condition requiring oxygen. Oxygen flow is initiated automatically through the oxygen aneroid valve or manually by opening the manual aneroid bypass valve.
 C. Oxygen Storage Cylinder
 (1) The oxygen storage cylinder has a capacity of 38 cubic feet at a pressure of 1800 (±50) psi. The cylinder is installed in the dorsal fin and is secured by clamps.
 D. Oxygen Pressure Gage
 (1) The direct reading oxygen pressure gage is installed in the upper portion of the copilot's flight panel. The gage is illuminated by a post light.
 E. Shutoff Valve and Regulator Assembly
 (1) The shutoff valve and regulator assembly form an integral part of the oxygen cylinder and regulate oxygen pressure at 60 to 80 psi for the crew and passenger distribution systems. The shutoff valve and regulator assembly incorporates connections for the oxygen distribution line, oxygen pressure gage capillary line, overboard discharge indicator and the service valves. The shutoff valve and regulator assembly also incorporates a burst disc relief valve. The burst disc is designed to relieve at 2700 to 3000 psi.
 (2) When the shutoff valve and regulator assembly is closed the oxygen distribution line is vented to ambient as evident by a slight hissing sound. When the service valve cap is removed, a slight leakage may be detected through the fill valve.

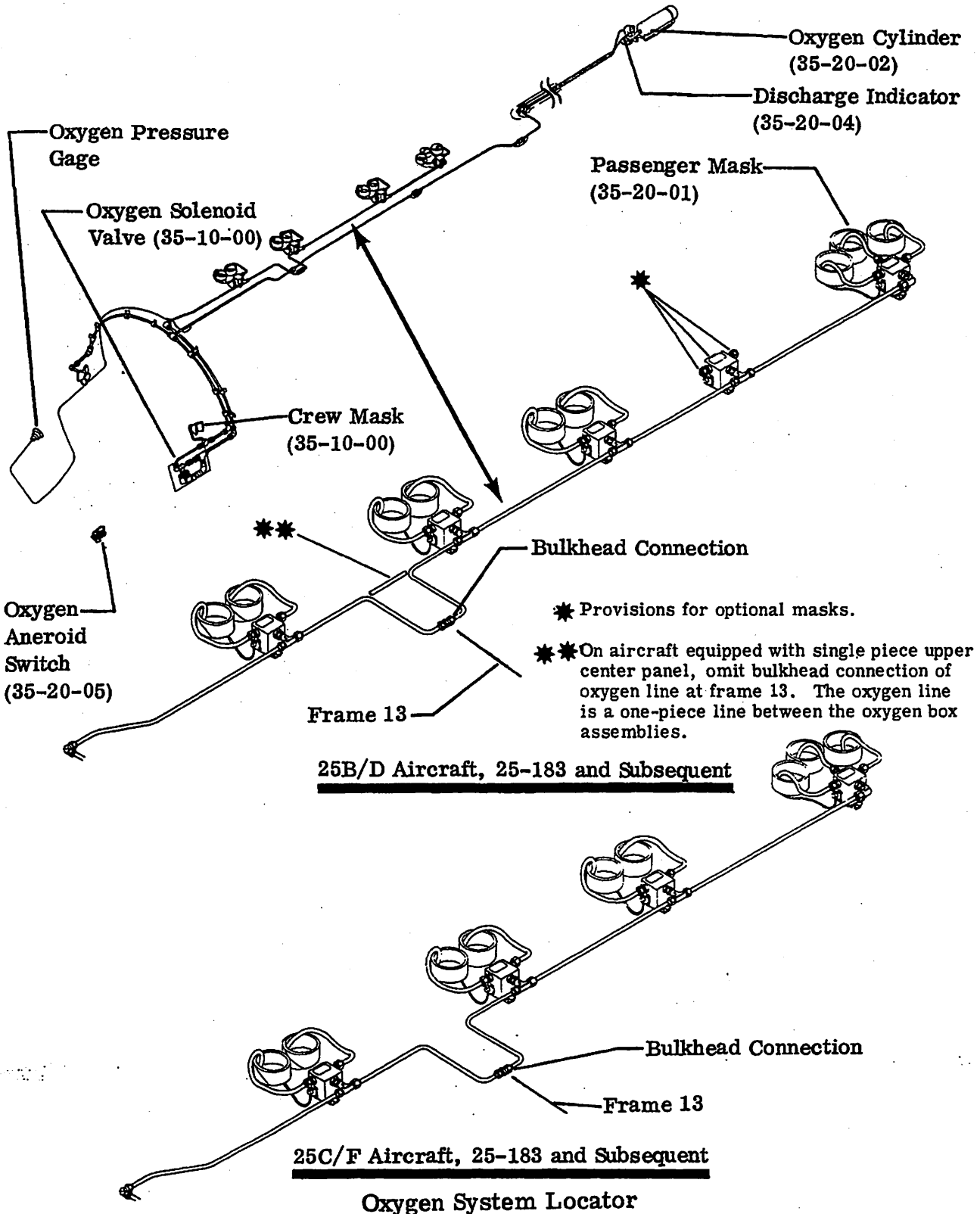
F. Overboard Discharge Indicator
(1) The overboard discharge indicator is installed on the RH side of the dorsal fin. The indicator is secured to the aircraft skin with rivets and incorporates a green blowout disc secured by a snap ring.

G. Oxygen Aneroid Switch
The oxygen aneroid switch is installed on the LH inner skin forward of the instrument panel. The switch energizes the oxygen solenoid valve if cabin altitude exceeds 14,000 (±750) feet.

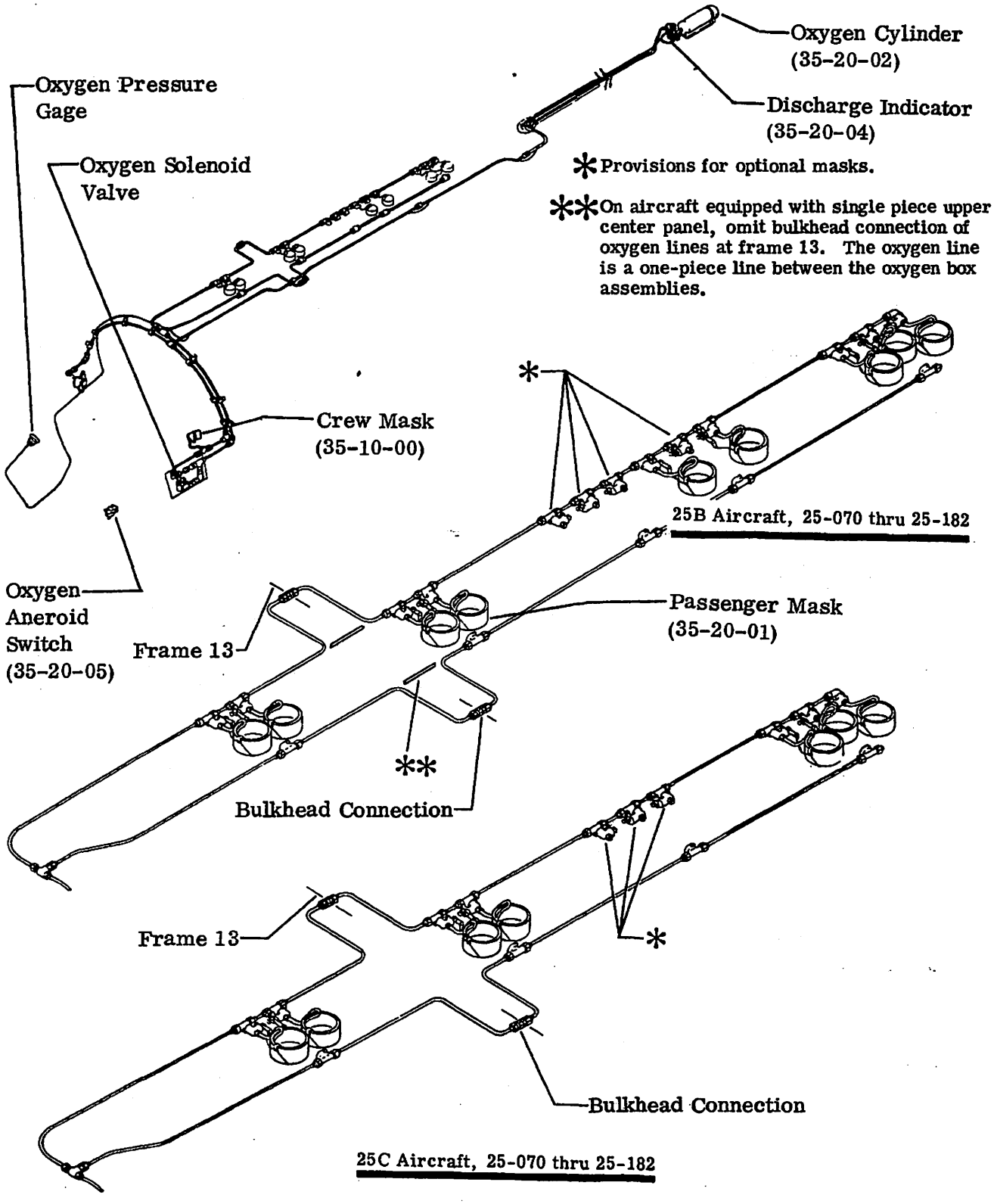
H. Oxygen Solenoid Valve
(1) The oxygen solenoid valve is located on the LH side of the cockpit above the circuit breaker panel and behind the upholstery panels. The solenoid valve (normally closed) is actuated by the oxygen aneroid switch to provide oxygen flow to the passenger distribution system.

I. Manual Aneroid Bypass Valve
(1) The manual aneroid bypass valve is installed on the LH side of the cockpit above the circuit breaker panel and behind the upholstery panels. The valve (normally closed) is installed in a bypass line around the oxygen solenoid valve and must be opened in case of aneroid switch malfunction.

J. Manual Passenger Oxygen Valve
(1) The manual passenger oxygen valve is installed on the LH side of the cockpit above the circuit breaker panel. The valve (normally open) is installed downstream of the manual aneroid bypass valve and the oxygen solenoid valve. The valve may be closed to provide oxygen to the crew only.



Oxygen System Locator
Figure 1 (Sheet 1 of 2)



Oxygen System Locator
Figure 1 (Sheet 2 of 2)

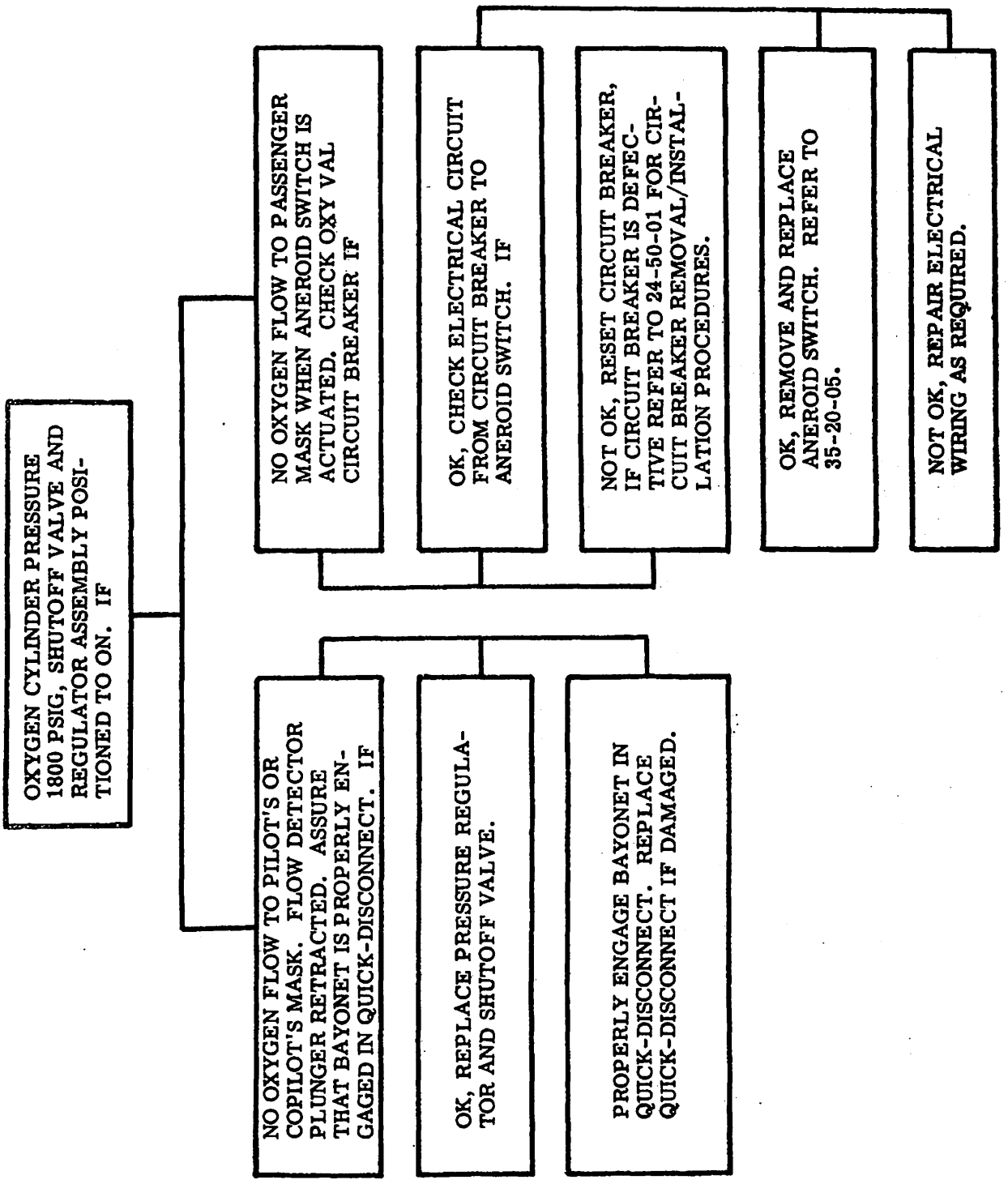
OXYGEN SYSTEM - TROUBLE SHOOTING

1. General
 A. A trouble shooting chart, figure 101, is provided as an aid in trouble shooting the entire oxygen system. The chart should be used in conjunction with reported discrepancies and with maintenance practice system tests.
 B. Prior to performing maintenance on the system, personnel should familiarize themselves with and strictly adhere to the maintenance precautions and procedures described in 35-00-00 General Maintenance Practices.

2. Tools and Equipment

NAME	PART NUMBER	MANUFACTURER	USE
Sherlock Lead Detector	Type CG	Zep Aero Corp. El Segundo, Calif.	For leak test.
Altimeter or Vacuum Gage			For checking altitude or vacuum during oxygen aneroid switch actuation.
Vacuum Pump			For actuation of oxygen aneroid switch.

3. Trouble Shooting
 A. Refer to figure 101 for trouble shooting procedure.



Oxygen System Trouble Shooting Chart
Figure 101

OXYGEN - MAINTENANCE PRACTICES

1. General
 A. Maintenance personnel should read and thoroughly understand the following maintenance precautions and procedures. Strict adherence to these instructions will aid in maintaining a trouble-free system.
 B. The oxygen system should be functionally tested at the time interval specified in Chapter 5-00-00.

2. Oxygen Maintenance Precautions and Procedures
 A. Maintenance on the oxygen system or any other system requiring removal of an oxygen system component requires strict adherence to the following procedures and precautions.

 WARNING: DO NOT PERMIT SMOKING OR OPEN FLAME IN OR NEAR AIRCRAFT WHILE MAINTENANCE IS BEING PERFORMED ON THE OXYGEN SYSTEM. ASSURE ALL ELECTRICAL POWER IS DISCONNECTED FROM AIRCRAFT AND THAT AIRCRAFT IS PROPERLY GROUNDED. OILS, GREASE, AND SOLVENTS MAY BURN OR EXPLODE SPONTANEOUSLY WHEN CONTACTED BY OXYGEN UNDER PRESSURE. BE SURE HANDS AND CLOTHING ARE FREE OF GREASE AND OIL.

 (1) Deplete oxygen system pressure.
 (2) Use extreme caution to assure every part of the system is kept thoroughly clean and free of water, oil, grease, and solvent contamination.
 (3) Cap all openings immediately upon removal of any component. Do not use tape or caps which will introduce moisture.
 (4) Observe extreme caution to avoid bending tubing or damaging the flares on tubing that is not being removed.
 (5) If an opening becomes uncapped or unplugged, the affected component must be removed and cleaned by degreasing with MIL-T-81533 1, 1, 1, trichlorethane, then drying with dry nitrogen (MIL-N-6011, Grade A, Type 1).
 (6) All tools used for installation of oxygen tubes or fittings must be free of dirt, grease, or oils.
 (7) Maintenance personnel must assure that their hands are free of dirt or grease prior to installation of oxygen tubing or fittings.
 (8) When connecting straight threaded fittings, align tubing and press flare end firmly against fitting end. Tighten nut 1/2 to 1 turn and apply MIL-T-5542 thread compound sparingly to the remaining exposed threads.

(9) When connecting tapered threaded fittings, place polytetrafluorethylene anti-seize tape (MIL-I-27730) so that a minimum of 1-1/2 threads remain uncovered at the starting end of the fitting. Stretch tape during wrapping of fitting and apply 1-1/2 turns of tape to fitting.

3. Servicing Oxygen Cylinder

A. Refer to Chaper 12 for complete servicing procedures.

4. Adjustment/Test

A. Tools and Equipment

NOTE: Equivalent substitutes may be used in lieu of the following items.

NAME	PART NUMBER	MANUFACTURER
Pressure Gage (0-200 psi)	10985-1	U. S. Gauge
Shutoff Valve	VZ902	Zep Aero Corp. El Segundo, Calif.
Nipples (2 ea.)	AN816-5D	Commercially Available
Hoses (4 ea.)	ZH740-12	Zep Aero Corp. El Segundo, Calif.
Tee	AN824-5D	Commercially Available
Sherlock Leak Detector	Type CG	Zep Aero Corp. El Segundo, Calif.

B. Leakage Test of Crew Oxygen System (See figure 201.)

(1) Fabricate oxygen system test set as shown in figure 201.
(2) Charge oxygen cylinder. (Refer to Chapter 12.)
(3) Close shutoff valve and pressure regulator assembly.
(4) Install oxygen system test set as shown in figure 201.
(5) Assure that manual passenger shutoff valve is closed.
(6) Open shutoff valve and pressure regulator assembly. Charge the oxygen system to approximately 70 psig by slowly opening the test set oxygen shutoff valve. Close oxygen shutoff valve.
(7) Close shutoff valve and pressure regulator assembly.
(8) Allow system to stabilize for one hour. Read and record oxygen system pressure (60 psig minimum).

(9) After two hours, read and record oxygen system pressure. There is no allowable pressure loss during the two hour period.
(10) A loss in system pressure indicates system leakage.
(11) Open shutoff valve and pressure regulator assembly.
(12) Open test set oxygen shutoff valve, again charging system to approximately 70 psig.
(13) Check pilot's and copilot's mask outlets using Sherlock type CG leak detector fluid.
(14) Remove equipment and upholstery from L.H. side of cockpit as required to gain access to oxygen system valves and fittings. Check all fittings and connections for leakage.
(15) If leaks are found, close shutoff valve and pressure regulator assembly. Oxygen pressure is automatically vented to ambient.
(16) Make necessary repairs and repeat leak test of the system.
(17) Wash leak test fluid off with water and clean cloths.
(18) Unless additional tests are required, install previously removed upholstery and equipment.
(19) Remove oxygen system test set. Install system tubing.
(20) Open shutoff valve and pressure regulator assembly and check tubing installed in step (19) for leaks.

C. Oxygen System Functional Test

WARNING: DO NOT PERMIT SMOKING OR OPEN FLAME IN OR NEAR AIRCRAFT WHILE MAINTENANCE IS BEING PERFORMED ON THE OXYGEN SYSTEM. ASSURE ALL ELECTRICAL POWER IS DISCONNECTED FROM AIRCRAFT AND THAT AIRCRAFT IS PROPERLY GROUNDED. OIL, GREASE, OR SOLVENTS MAY BURN OR EXPLODE SPONTANEOUSLY WHEN CONTACTED BY OXYGEN UNDER PRESSURE.

(1) Check oxygen cylinder pressure for approximately 1800 psig. Recharge if necessary.
(2) Check to assure that shutoff valve and regulator assembly is open and the manual passenger shutoff valve is closed.
(3) Using either the pilot's or copilot's oxygen mask, insert the bayonet end of hose in the pilot's oxygen valve, don mask, and check for presence of oxygen. Check the copilot's oxygen in the same manner.
(4) Open the manual passenger shutoff valve.
(5) Connect a vacuum source and altimeter (or vacuum gage) to the open port of the oxygen aneroid switch. The aneroid switch is located under the instrument panel on the left side of the cabin near frame 5.
(6) Set Battery switch(es) to ON.

(7) Slowly pull a vacuum until an altimeter reading of 14,000 feet (17.57 inches Hg) is obtained. Between 13,250 feet (18.11 inches Hg) and 14,750 feet (17.05 inches Hg), the aneroid switch should actuate and the passenger masks should drop out. On Aircraft 25-090, 25-094 and Subsequent and Aircraft modified per AAK 73-6, the cabin upper center panel lights will illuminate.

(8) Check each mask for the following:
 (a) Face-piece for holes, cuts or tears.
 (b) Front and back valve housings for cracks, breaks and damage to valve seats.
 (c) Economizer bag for torn or imperfect seams, holes and mildew.
 (d) Tubing clamp for security of installation, cracks and distortion.
 (e) Tubing for cracks or kinks.
 (f) Head strap for corroded or distorted clips, elasticity, cleanliness and security of attachment.

WARNING: CHECK THAT THE MASK LANYARD IS TIED TO AN APPROXIMATE DOUBLE LENGTH OF 3 INCHES. THE LANYARD SHOULD BE PULLED WHEN MASK IS PUT TO FACE.

(9) Pull the lanyard of each individual mask and check for oxygen flow.

(10) Close the shutoff valve and regulator assembly. When the shutoff valve and regulator assembly is closed and the oxygen solenoid valve is energized the pressure in the oxygen system will be vented to ambient.

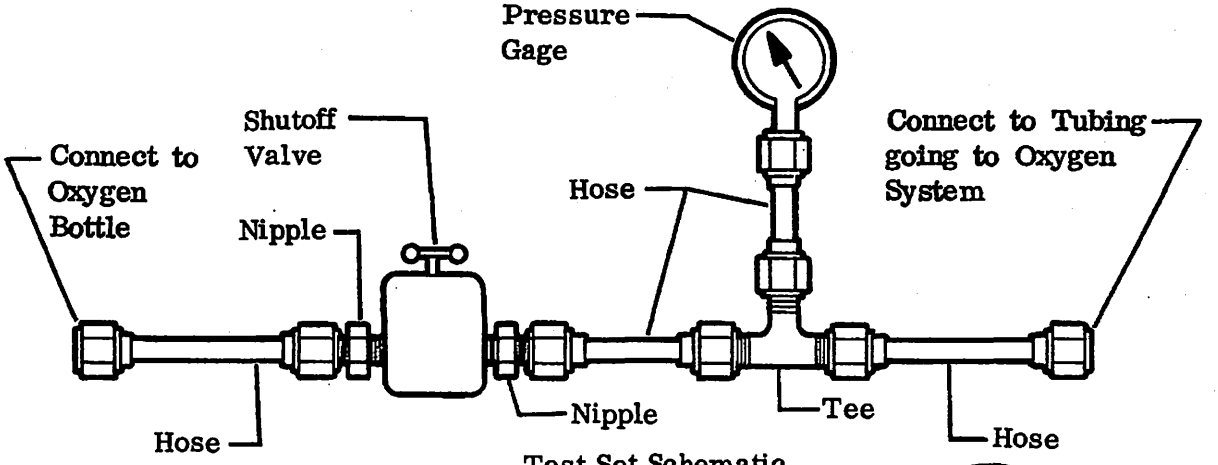
(11) Slowly release vacuum from aneroid switch. At approximately 8,000 feet the aneroid switch will open deenergizing the oxygen solenoid valve. On Aircraft 25-090, 25-094 and Subsequent and Aircraft modified per AAK73-6, the cabin upper panel lights will go out.

(12) Set Battery switch(es) to OFF.

(13) Disconnect altimeter (or vacuum gage) and vacuum source from the aneroid switch.

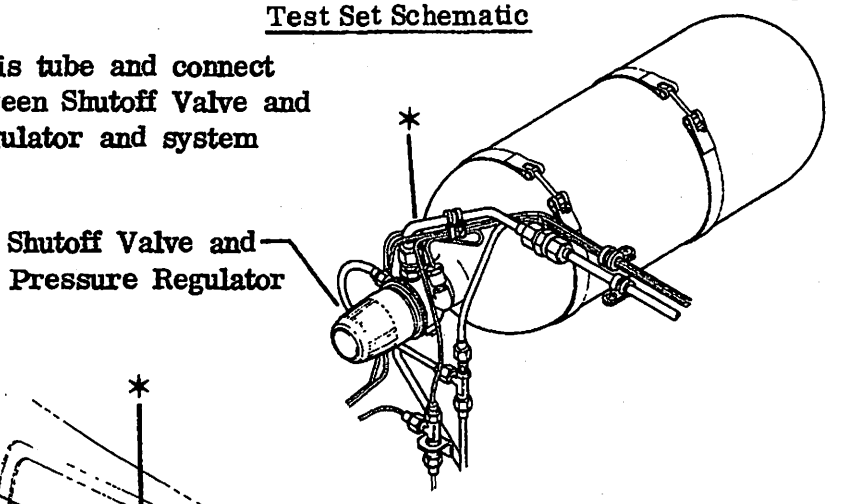
(14) Stow the crew and passenger masks and close the manual passenger shutoff valve.

(15) Recharge the oxygen cylinder in accordance with 12-10-00.

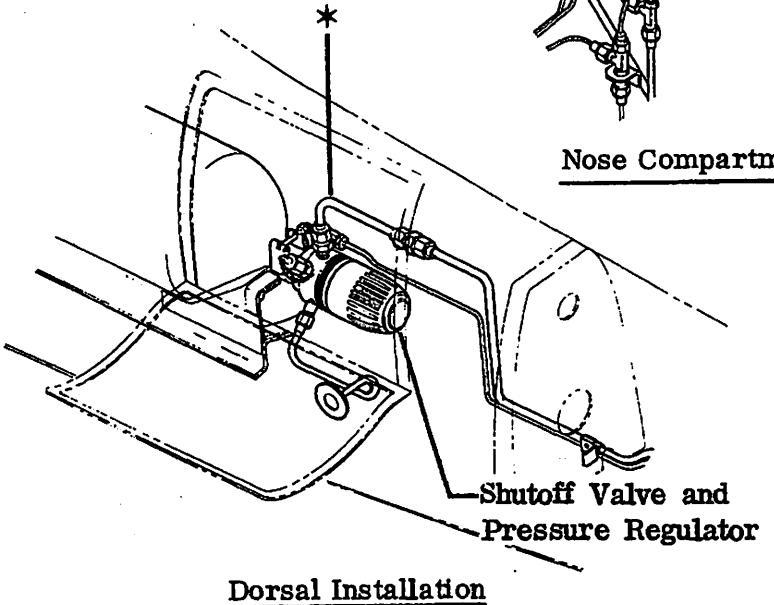


Test Set Schematic

* Disconnect this tube and connect Test Set between Shutoff Valve and Pressure Regulator and system supply tube.



Nose Compartment Installation



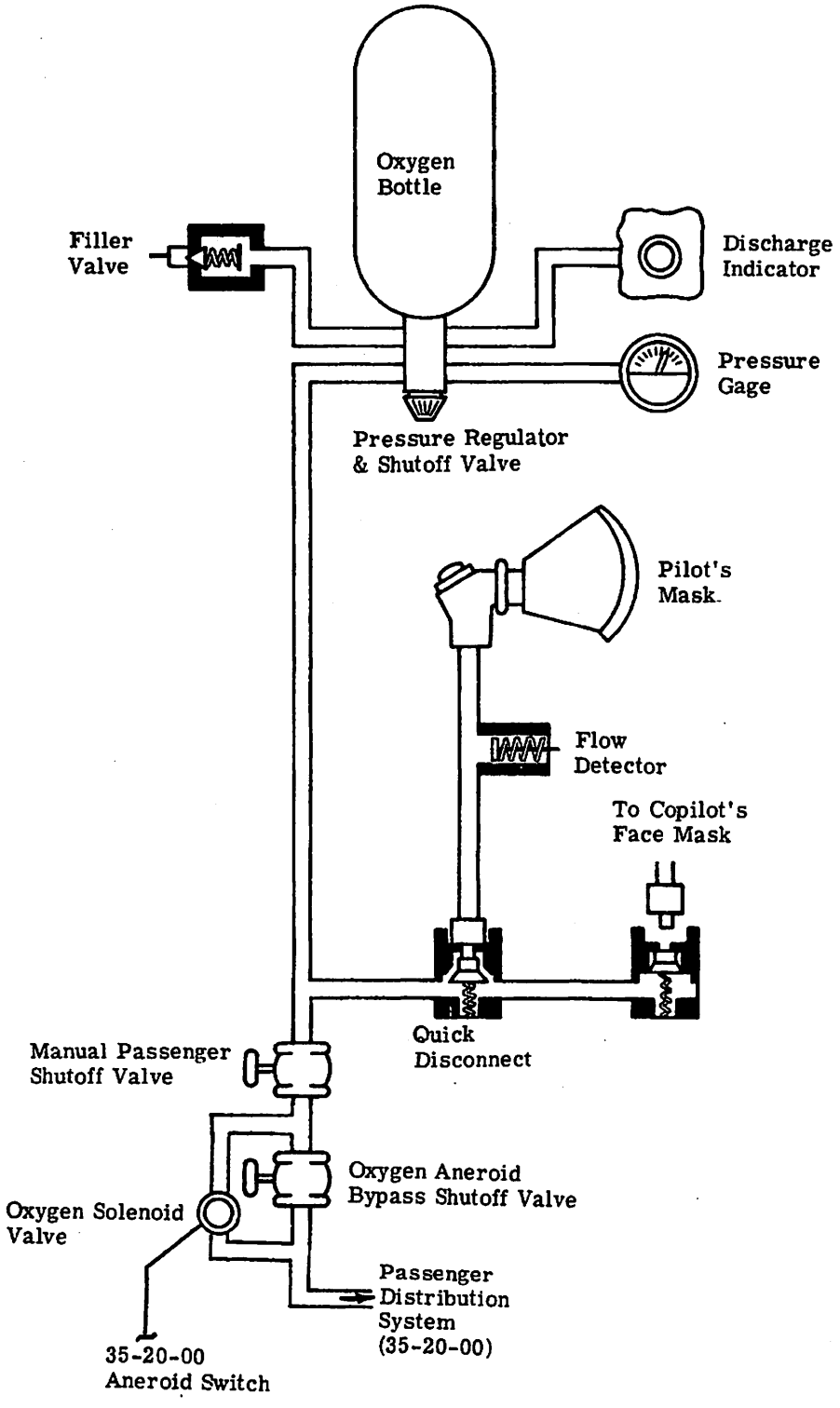
Dorsal Installation

Crew Oxygen System Leakage Test
Figure 201

CREW - DESCRIPTION AND OPERATION

1. General
 A. Oxygen flow is initiated to the crew members when the oxygen cylinder shutoff valve and pressure regulator is open (normal position) and the bayonet fitting on the diluter-demand masks is inserted into the oxygen quick-disconnects. The crew distribution system consists of two diluter-demand masks and two oxygen quick-disconnects.

2. Description
 A. Crew Masks
 (1) The masks are stowed on hangers for easy access to the crew members. The mask incorporates a quick-donning head harness.
 (2) Crew masks consist of either the diluter-demand type or the pressure-demand type. The diluter demand mask has a two position lever on the regulator which allows the crew members to select either NORMAL or 100% OXY. The pressure demand mask has a two position function knob and a two position diluter knob. The function knob may be either set to NORM or EMER and the diluter may be set to either DILUTE or 100%.
 (3) Each mask incorporates a microphone. An electrical cord extends from the mask and is plugged into the phone jack adjacent to the oxygen quick-disconnect.
 (4) A flow detector is installed in each crew mask supply line. The flow detector is basically a spring loaded plunger which becomes visible (green) when oxygen pressure is present in the crew mask supply line.
 B. Quick-Disconnect
 (1) A quick disconnect is installed for each crew member. Inserting the bayonet into the quick-disconnect moves a spring loaded poppet off its seat and allows oxygen flow. The quick-disconnect also incorporates a spring loaded cover for the quick-disconnect opening when not is use.



Crew Oxygen System Schematic
Figure 1

CREW OXYGEN MASK - MAINTENANCE PRACTICES

1. General
 A. Removal and installation of the crew masks are identical.

2. Tools and Equipment

 NOTE: Equivalent substitutes may be used for the following items.

NAME	NUMBER	MANUFACTURER	USE
Cleaning and Sanitizing Kit	C420-1000-1-F	Zep Aero Corp. El Segundo, Calif.	Cleaning and sterilization of masks.

3. Removal/Installation
 A. Remove Mask
 (1) Disconnect microphone from phone jack.
 (2) Disconnect bayonet from oxygen quick-disconnect.
 (3) Remove mask from hanger.
 B. Install Mask
 (1) Connect microphone to phone jack.
 (2) Connect bayonet to oxygen quick-disconnect.
 (3) Place mask in hanger.

4. Inspection/Check
 A. Check Mask
 (1) Visually check crew mask and connections for general condition and installation.
 (2) Check microphone circuit, refer to 23-00-00.

5. Cleaning/Painting
 A. Clean Mask
 (1) Use a clean container.
 (2) Add 1/2 oz. mild detergent to one gallon of water.

 CAUTION: DO NOT ALLOW WATER TO ENTER MICROPHONE OR ELECTRICAL CONNECTION.

 (3) Apply solution with brush or towel as required to remove contamination.
 (4) Rinse mask.
 (5) Allow to air dry or wipe dry.

(6) Lightly spray internal surface of mask, including valves and microphone, with antiseptic spray.
(7) Allow to air dry or wipe dry.

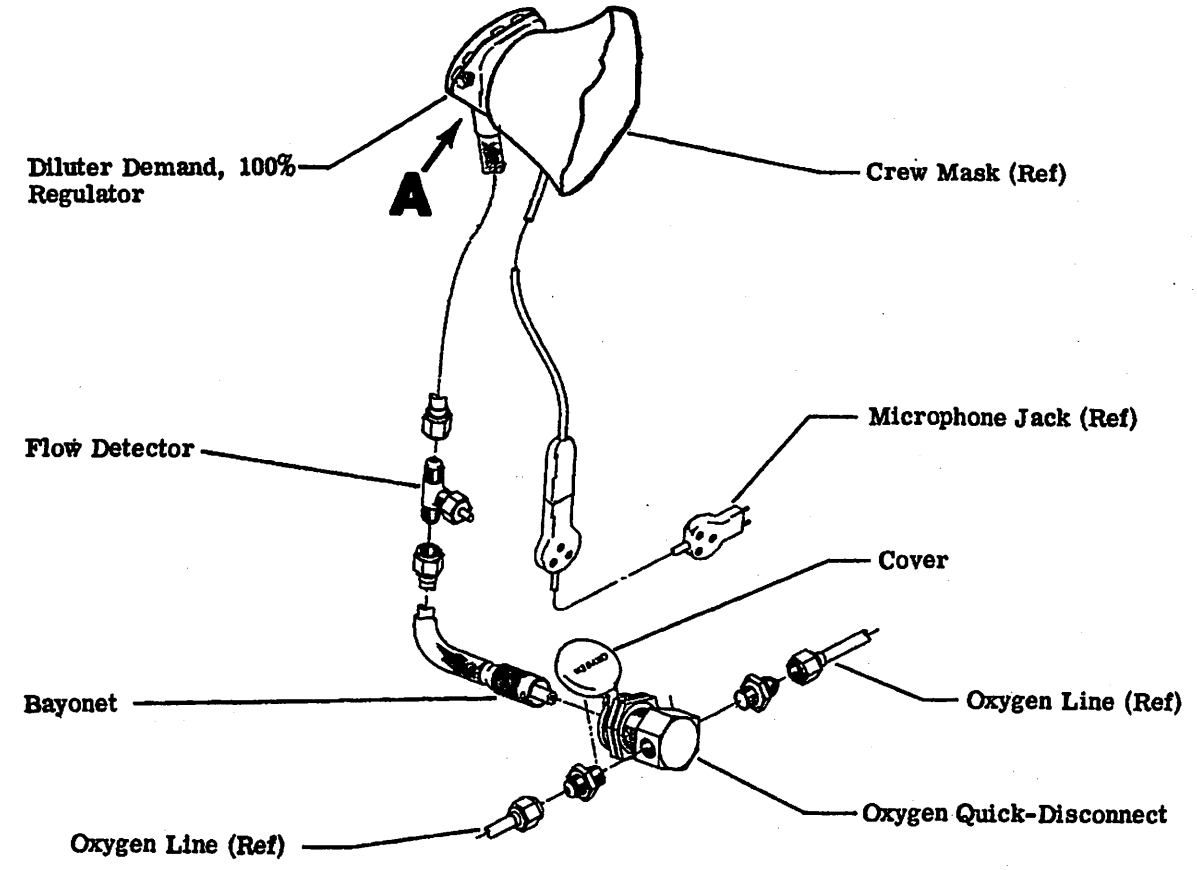
6. Approved Repairs
A. Flow Detector and Hose Replacement (See figure 201)
(1) Remove crew oxygen mask.

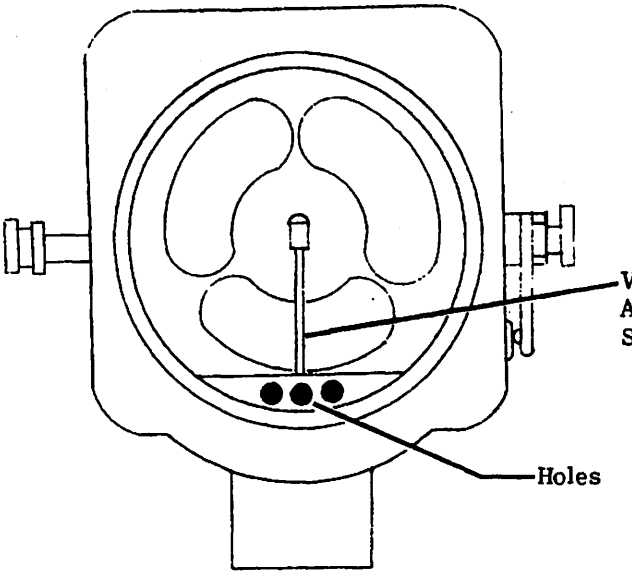
NOTE: If microphone cord keepers are attached to hose, cut off keepers with a knife or scissors, using caution not to damage microphone cord.

(2) Remove oxygen regulator assembly from mask.
(3) Insert two number 60 (0.040) diameter pins of the same length through the two outer holes in oxygen regulator and slot of regulator valve assembly.
(4) Loosen fitting and remove hose assembly from regulator.
(5) Holding pins (installed in step 3) securely to prevent rotation of valve assembly, carefully install new flow detector and hose assembly in regulator. Tighten hand tight and remove pins.
(6) Torque flow detector and hose assembly to 30 inch-pounds.

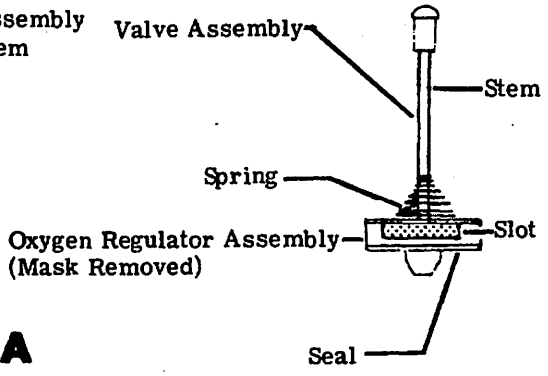
NOTE: Visually inspect to insure that holes and slot are aligned.

(7) Install oxygen mask on regulator assembly.
(8) Insert bayonet in oxygen quick-disconnect.
(9) Connect microphone jack.





NOTE: Align slot in valve assembly with holes in oxygen regulator.



Detail A

Oxygen Flow Detector and Hose Assembly
Figure 201

PASSENGER - DESCRIPTION AND OPERATION

1. General
 A. Oxygen flow is initiated automatically through the oxygen solenoid valve or manually through the manual aneroid bypass valve. The passenger masks are stowed in storage compartments located in the upper center panel.
 B. On 25B/D aircraft, the passenger oxygen system consists of five storage compartments, five lanyard actuator valves, eleven passenger masks, and provisions for four optional masks.
 C. On 25C/F aircraft, the passenger oxygen system consists of four storage compartments, four lanyard actuator valves, nine passenger masks, and provisions for three optional masks.

2. Description
 A. Oxygen Supply System
 (1) An oxygen system supply line connects to the main distribution system at F.S. 221.59 and is routed aft, on the LH side of the upper center panel. The line actuates the storage door release and supplies oxygen to the oxygen masks.
 B. Storage Compartment
 (1) On 25B/D aircraft, five storage compartments are installed in the upper center panel. The forward compartment contains three masks. The remaining compartments contain two masks each with provisions for an optional mask.
 (2) On 25C/F aircraft, four storage compartments are installed in the upper center panel. The forward compartment contains three masks. The remaining compartments contain two masks each with provisions for an optional mask.
 (3) The storage compartment incorporates a door.
 C. Lanyard Actuator Valve
 (1) The lanyard actuator valves incorporate a spring loaded, pressure actuated latch which secures the compartment door in the up-and-locked position. The valves are connected to the passenger distribution system pressure line. When pressure is supplied to the passenger distribution system the spring loaded latch retracts, allowing the doors to fall open and the masks to fall out. When the doors are opened and passenger oxygen has not been utilized, one of the lanyards must be pulled to relieve oxygen pressure from the system. As soon as the pressure is relieved the spring loaded latch will extend, then the door may be stowed in the up-and-locked position.

(2) On Aircraft 25-183 and Subsequent, the lanyard actuator valve also incorporates one inlet port and three outlet ports to which the passenger mask is connected. The ports incorporate plungers which are held closed by the lanyard pin. When optional masks are not installed the outlet port is capped and the lanyard is safety wired.

D. Manual Door Release

(1) The manual door release consists of a knob attached to the lanyard valve actuator latch. The manual door release is used to open the storage compartment door when flight altitude requires masks to be worn.

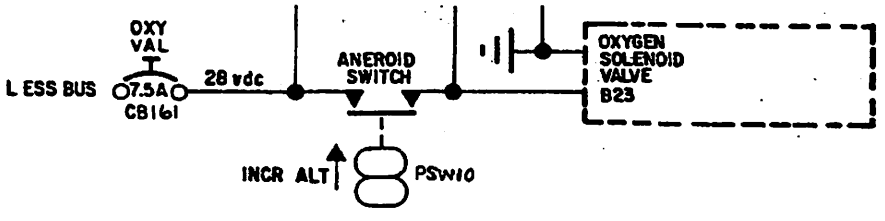
E. Masks

(1) The mask consists of a soft silicone rubber face piece molded to facial contour, an economizer bag, head strap, length of plastic tubing and a lanyard cord with lanyard attached. An orifice is incorporated in the mask to provide a constant flow of 4.1 "liters per minute" to the passenger.

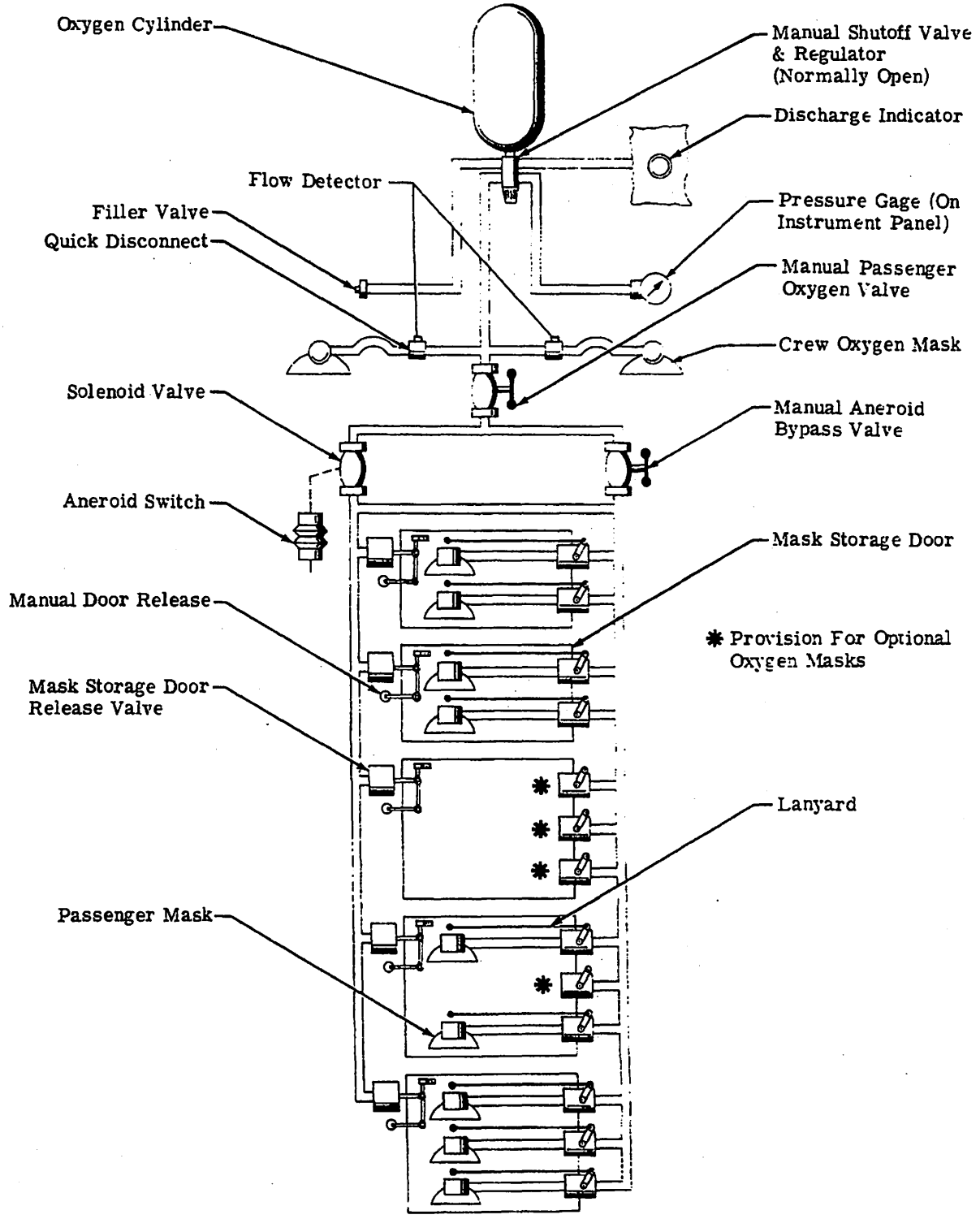
3. Operation

A. Oxygen pressure is present at the oxygen solenoid valve and the manual aneroid bypass valve at all times. Oxygen flow can be initiated by two methods: (1) automatically through the aneroid controlled solenoid shutoff valve or (2) manually by opening the manual aneroid bypass valve. If pressurization system failure should occur, the aneroid switch senses the rise in cabin altitude. If cabin altitude reaches 14,000 (±750) feet the aneroid switch completes power circuit to the solenoid shutoff valve. The solenoid valve opens and oxygen pressure of 60 to 80 psi then flows to the lanyard actuator valves. If the aneroid switch or the solenoid valve fails, the manual aneroid bypass valve is then opened to initiate oxygen flow to the lanyard actuator valve. The oxygen pressure causes the valve latch to retract, opens the storage compartment doors, and releases the passenger masks. When the masks are donned and the lanyard is pulled, oxygen flows at 4.1 LPM.

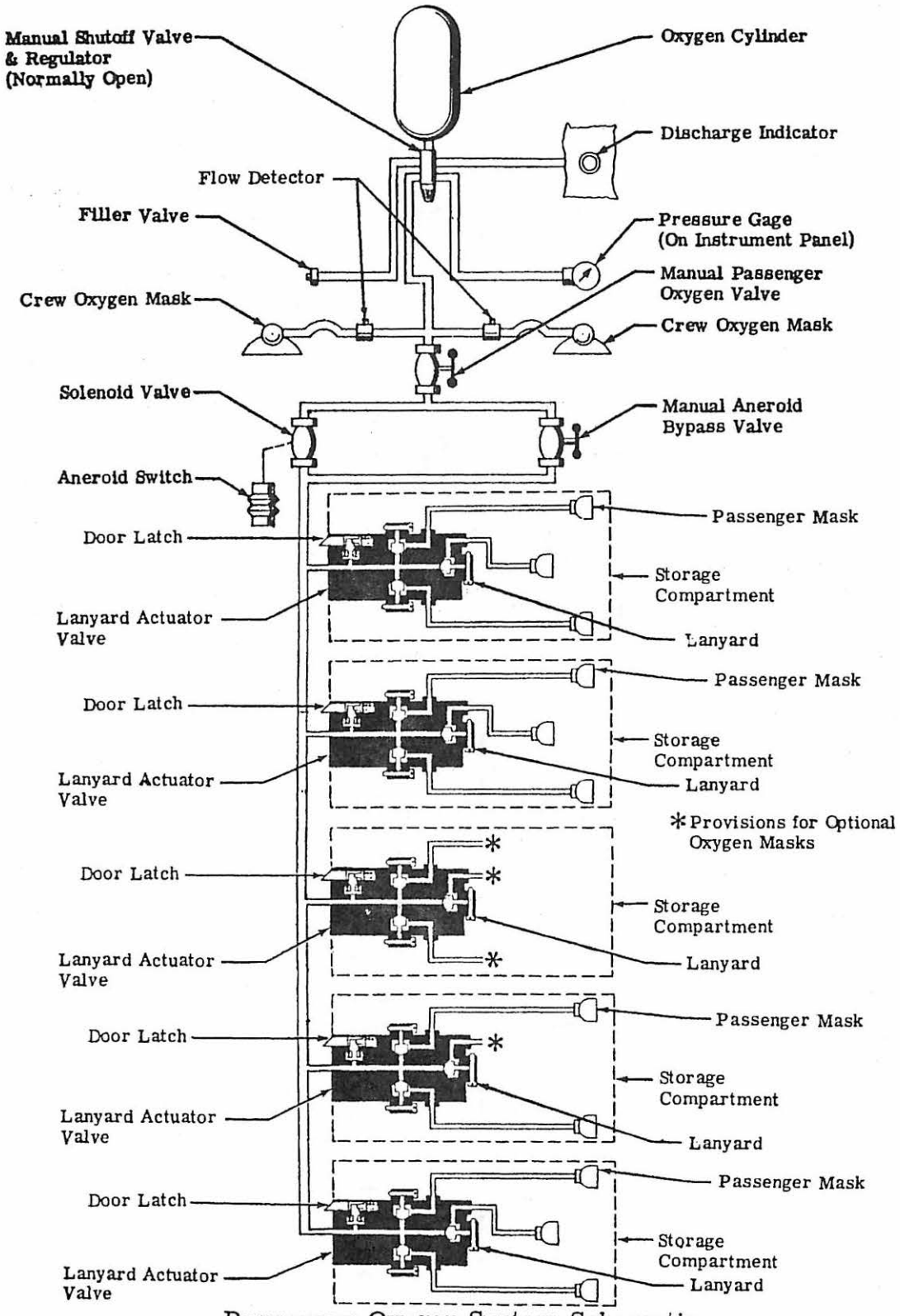
On Aircraft 25-090, -094 and Subsequent and Aircraft Modified per AAK 73-6, refer to 33-50-00 for Depressurization Lighting



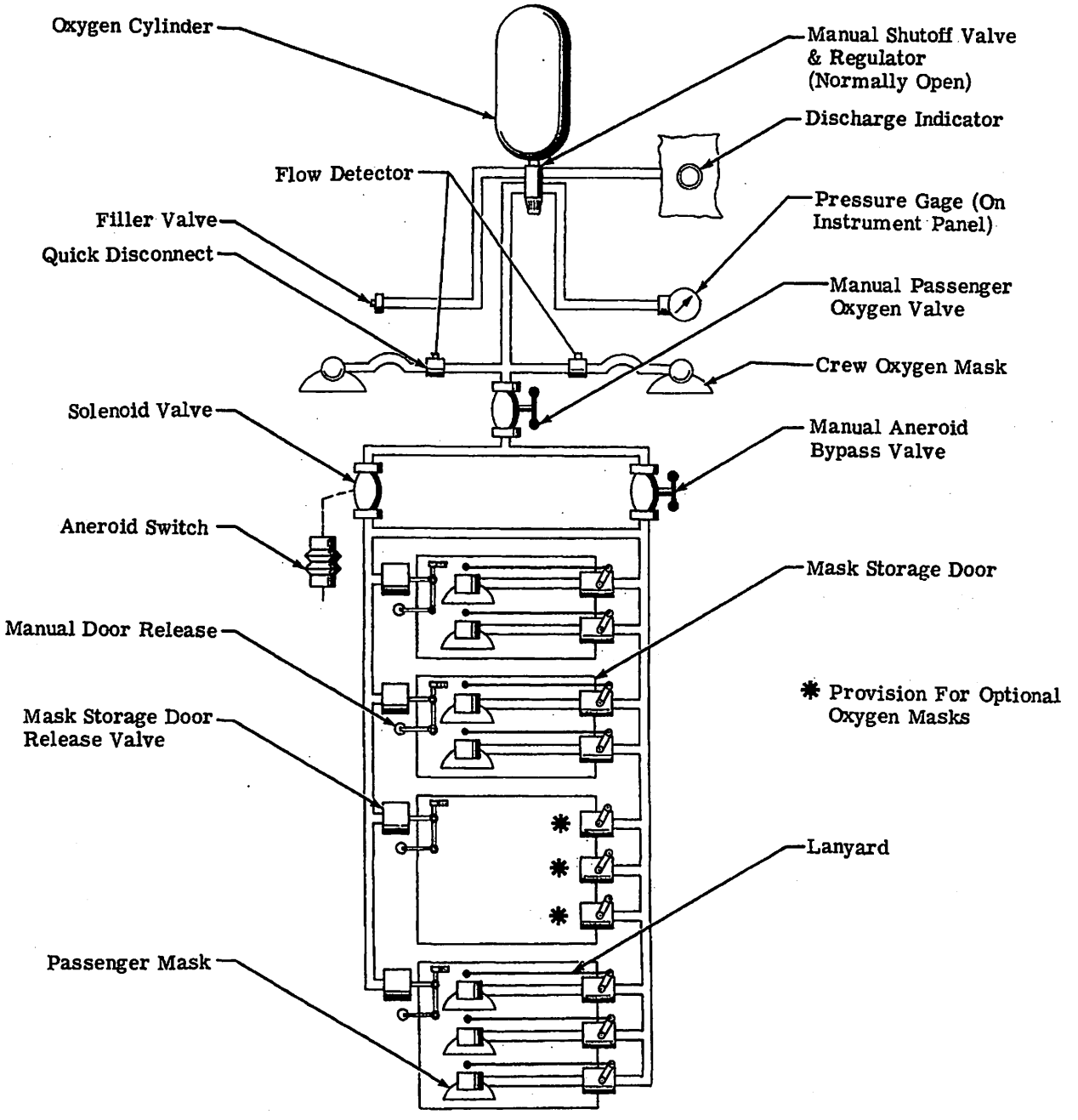
Passenger Oxygen System Electrical Control Schematic
Figure 1



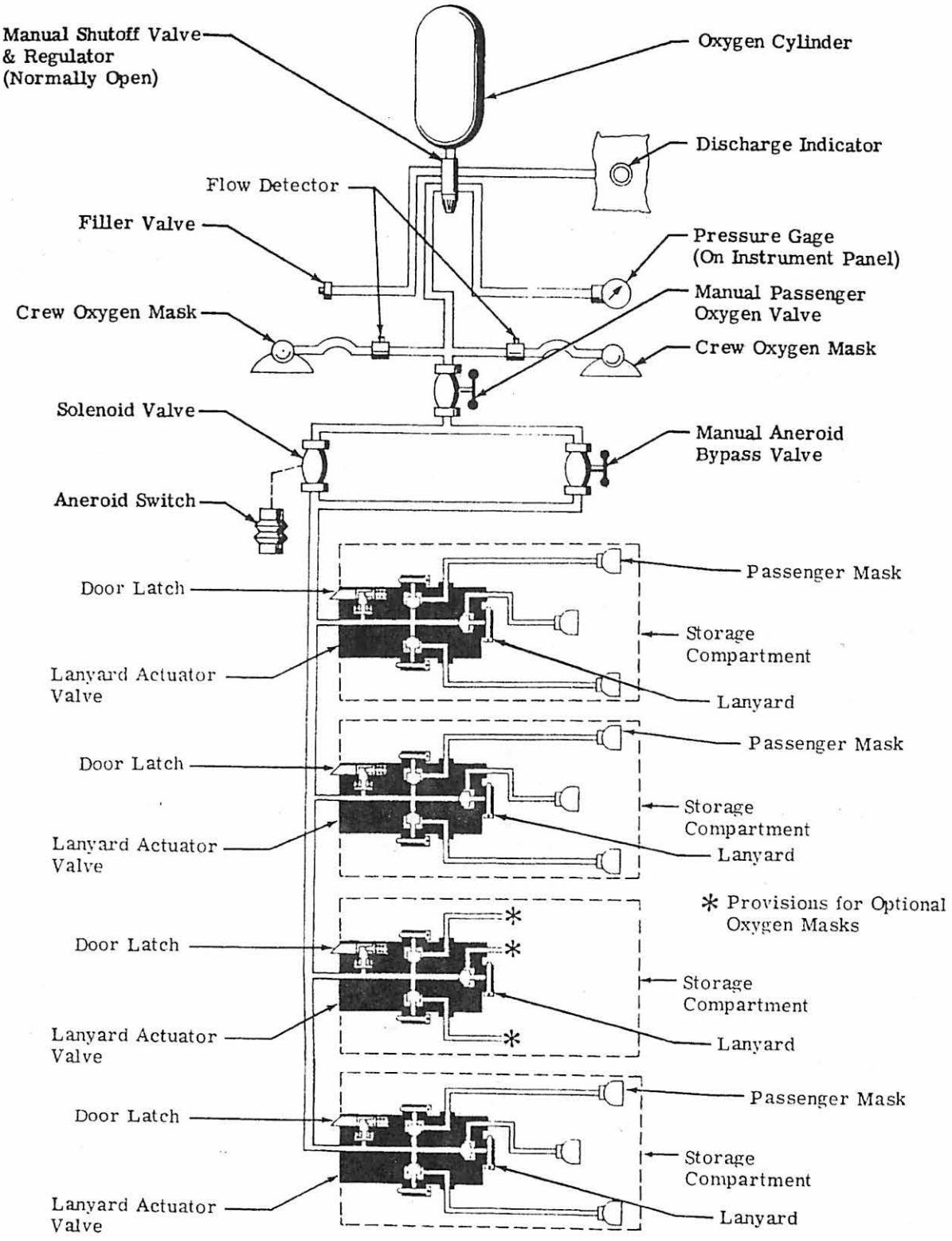
Passenger Oxygen System Schematic
Figure 2 (Sheet 1 of 4)



Passenger Oxygen System Schematic
Figure 2 (Sheet 2 of 4)



Passenger Oxygen System Schematic
Figure 2 (Sheet 3 of 4)



Passenger Oxygen System Schematic
Figure 2 (Sheet 4 of 4)

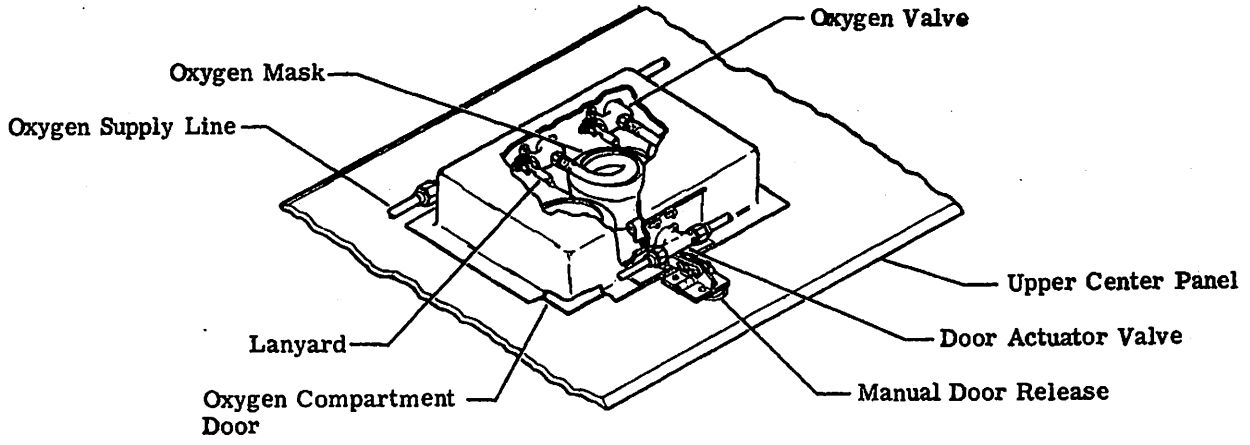
PASSENGER MASK - MAINTENANCE PRACTICES

1. General
 A. Prior to performing maintenance, personnel should adhere to safety precautions and procedures described in 35-00-00, Oxygen Maintenance Precautions and Procedures.

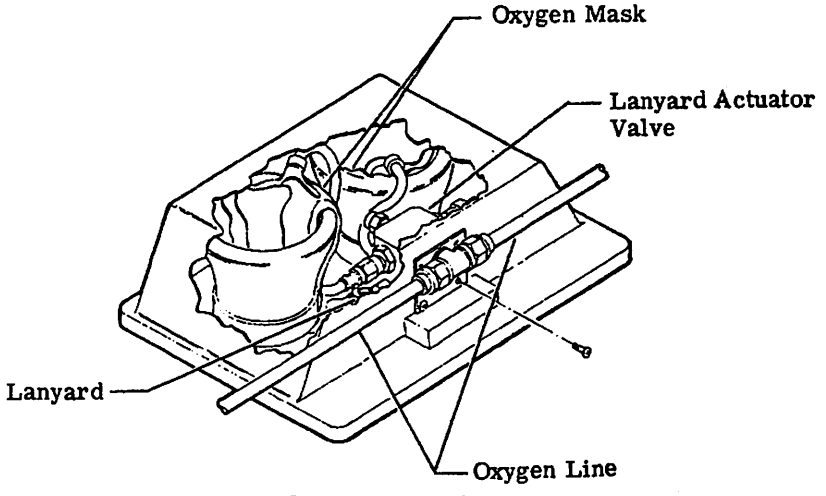
2. Tools and Equipment

NAME	NUMBER	MANUFACTURER	USE
Cleaning and Sanitizing Kit	C420-1000-1-F	Zep Aero Corp. El Segundo, Calif.	Cleaning and sterilization of mask.

3. Removal/Installation
 A. Remove Mask (See figure 201)
 (1) Close manual passenger oxygen valve.
 (2) Depress manual storage door release.
 (3) Disconnect mask supply tube from oxygen service valve.
 (4) Remove lanyard from oxygen service valve.
 B. Install Mask (See figure 201)
 (1) Connect mask supply tube to service valve.
 (2) Assure that mask lanyard is tied by a double strand cord approximately 3 inches in length. This will assure that lanyard will be pulled before mask is donned.
 (3) Install oxygen mask in stowage compartment as follows:
 (a) Let mask hang and remove all supply tube entanglements.
 (b) Hold mask open end up.
 (c) Fold head strap into mask.
 (d) Fold economizer bag lengthwise to width slightly smaller than width of mask opening.
 (e) Fold economizer bag into mask.
 (f) Coil supply tube into mask.
 (g) Fold lanyard cord over supply tube and insert lanyard in oxygen service valve.
 (h) Place mask in stowage compartment and close door.



Aircraft 25-061, -070 thru -182



Aircraft 25-183 and Subsequent

TYPICAL OXYGEN MASK INSTALLATION

Passenger Oxygen Mask Installation
Figure 201

4. Inspection/Check
 A. Unfold Mask and Check the Following:
 (1) Face-piece for holes, cuts or tears.
 (2) Front and back valve housings for cracks, breaks, and damage to valve seats.
 (3) Economizer bag for torn or imperfect seams, holes and mildew.
 (4) Tubing clamp for security of installation, cracks and distortion.
 (5) Tubing for cracks or kinks.
 (6) Head strap for corroded or distorted clips, elasticity, cleanliness and security of attachment.

5. Cleaning/Painting
 A. Clean Mask (Puritan-Zep)
 (1) Using suitable container, add 1 teaspoon of mild detergent to 18 oz. of water.
 (2) Install valve shield in mask.
 (3) Apply solution to mask with soft bristle brush or towel.
 (4) Rinse mask.
 (5) Remove valve shield.
 (6) Wipe or air dry.
 (7) Spray internal surface, including valves, lightly with antiseptic spray.
 (8) Wipe or air dry.
 (9) Apply talcum powder to external surfaces of rubber face piece.
 (10) Install mask in stowage compartment.
 B. Clean Mask (Sierra Engineering)
 (1) Using a suitable container, add 1/2 teaspoon of mild detergent to each gallon of warm water. Do not use water hotter than 140°F.
 (2) Apply solution to facecup with soft bristle brush on towel.
 (3) Rinse all parts in cold water.
 (4) Allow to air dry at room temperature.
 (5) Wash exterior of bag and oxygen tube.

 NOTE: Keep ends of oxygen tube and bag closed to prevent detergent solution from entering.

 (6) After all parts are thoroughly dry and no visible residue remains, disinfect with a solution of 3 parts zephiran chloride to 1 part water.
 (7) Allow parts to dry thoroughly.
 (8) Lightly dust outside of facecup with Neo-Novacite powder. (P/N 00-736, Sierra Engineering Co., Sierra Madre, Calif.)

OXYGEN CYLINDER - MAINTENANCE PRACTICES

1. General
 A. The oxygen cylinder assembly is installed in the dorsal fin. The cylinder assembly stores 38 cubic feet of oxygen under a pressure of 1800 (±50) psi. A manual shutoff valve and regulator assembly is installed on the cylinder assembly.
 B. Prior to performing maintenance, personnel should adhere to safety precautions and procedures described in 35-00-00, Oxygen Maintenance Precautions and Procedures.

2. Tools and Equipment

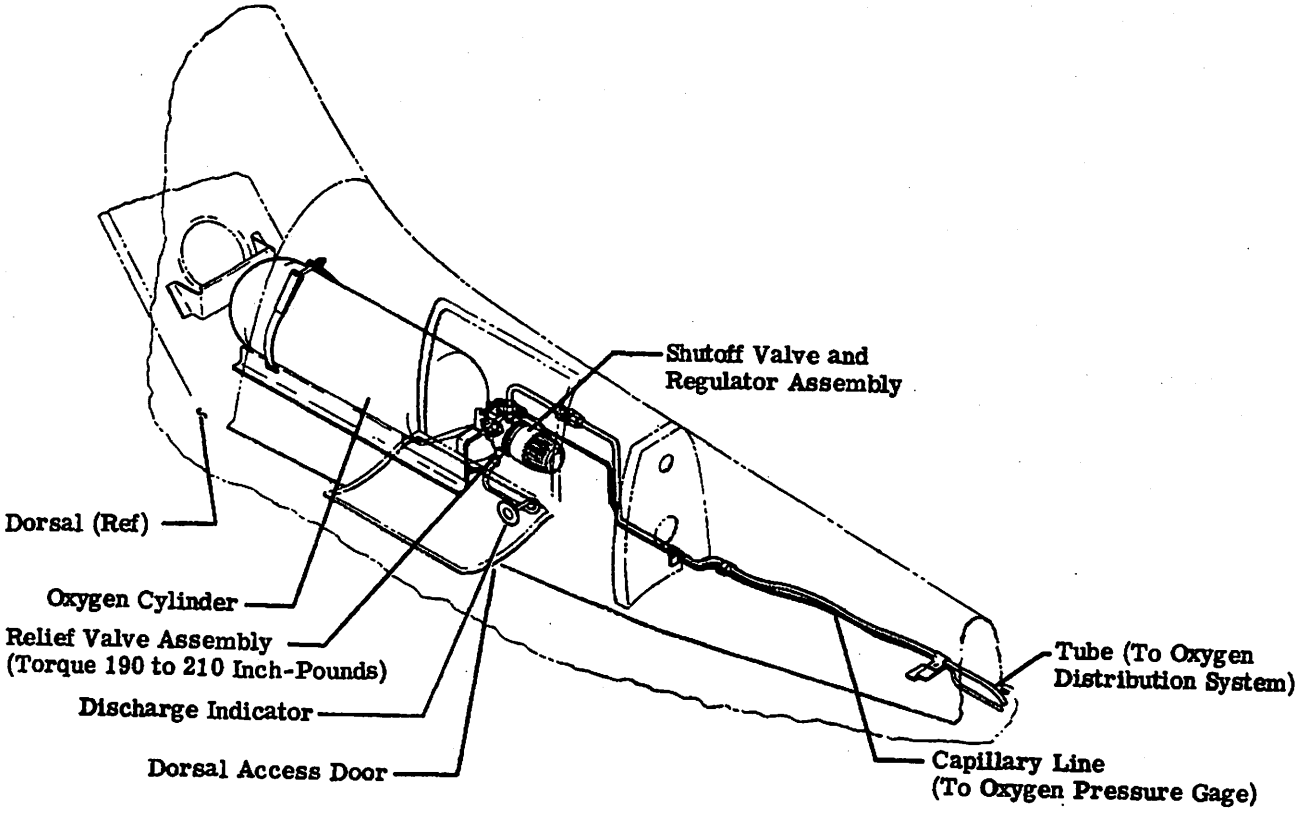
 NOTE: Equivalent substitutes may be used in lieu of the following items.

NAME	NUMBER	MANUFACTURER	USE
Sherlock Leak Detector Compound	Type CG	Zep Aero Corp. El Segundo, Calif.	For leak test fluid.

3. Removal/Installation
 A. Remove Oxygen Cylinder (See figure 201)
 (1) Open dorsal access door.
 (2) Close shutoff valve and regulator assembly.

 NOTE: Oxygen pressure in system lines will bleed to ambient through shutoff valve and regulator assembly when the shutoff valve and regulator assembly is closed.

 (3) Disconnect and cap oxygen pressure gage line, oxygen distribution system line and discharge indicator line.
 (4) Loosen clamps and remove oxygen cylinder from aircraft.
 B. Install Oxygen Cylinder (See figure 201)
 (1) Position oxygen cylinder in cradle.
 (2) Remove caps from tubing and connect tubing to appropriate fitting.
 (3) Tighten clamps around oxygen cylinder.
 (4) Open shutoff valve and pressure regulator.
 (5) Check for leaks, using Sherlock Leak Detector Compound.
 (6) Close and secure dorsal access door.



Oxygen Cylinder Installation
Figure 201

OXYGEN PRESSURE GAGE - MAINTENANCE PRACTICES

1. General

A. The oxygen pressure gage is located in the upper portion of the co-pilot's flight panel. The gage is plumbed by a capillary line directly to the oxygen cylinder. The gage is illuminated by a post light. Refer to 31-00-00 for instrument markings.

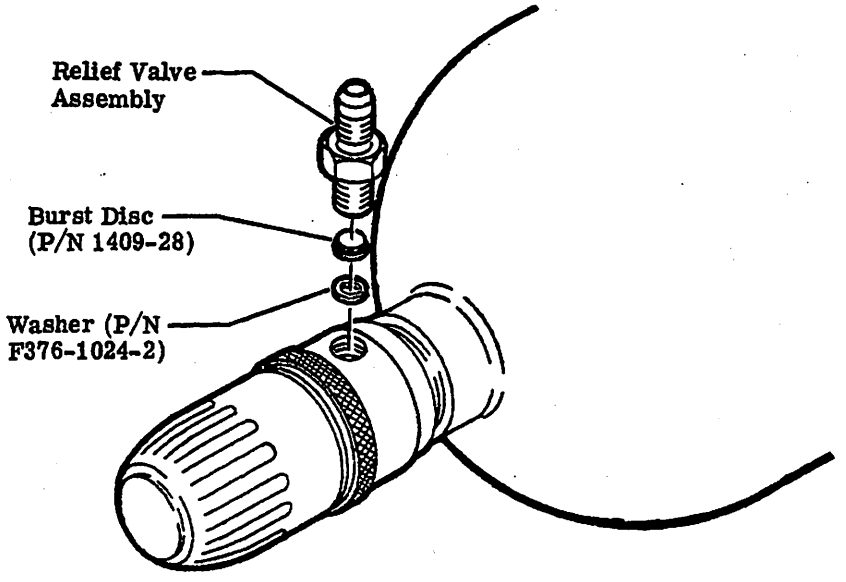
SHUTOFF VALVE AND REGULATOR ASSEMBLY - MAINTENANCE PRACTICES

1. General
 A. The shutoff valve and regulator assembly, an integral part of the oxygen cylinder, regulates the high pressure oxygen at 60 to 80 psi for the crew and passenger distribution systems. The shutoff valve incorporates connections for the oxygen distribution line, oxygen pressure gage capillary line, overboard discharge line and service valve.
 B. The shutoff valve and regulator assembly also incorporate a burst disc. This disc allows thermal discharge of the oxygen cylinder thru the overboard discharge line and indicator. The burst disc is designed to relieve at 2700 to 3000 psi.
 C. When the shutoff valve and regulator assembly is closed,the oxygen distribution lines are vented to ambient.

2. Removal/Installation
 A. The shutoff valve and regulator assembly is an integral part of the cylinder and may not be removed. If the shutoff valve and regulator assembly is defective, replace the entire assembly.

3. Burst Disc Replacement
 A. Remove Burst Disc (See figure 201)
 (1) Open dorsal access door.
 (2) Close shutoff valve and regulator assembly.
 (3) Disconnect plumbing from shutoff valve and regulator assembly and cap all exposed lines and fittings.
 (4) Remove relief valve assembly from shutoff valve and regulator assembly. Part of the ruptured burst disc will be released when relief valve assembly is removed.
 (5) Loosen clamps securing oxygen cylinder in cradle.
 (6) Rotate oxygen cylinder until relief valve assembly port is up.
 (7) Using a suitable tool, extract washer and remainder of burst disc from port.
 B. Install Burst Disc (See figure 201)
 (1) Assemble burst disc and washer in relief valve assembly port as shown.
 (2) Install relief valve assembly and tighten 1/2 to 1 turn. Apply MIL-T-5542 thread compound sparingly to remaining exposed threads.
 (3) Slowly tighten relief valve assembly until it is firmly seated. Torque assembly 190 to 210 inch-pounds.
 (4) Rotate oxygen cylinder to its original position.
 (5) Remove caps and connect plumbing. Tighten connections 1/2 to 1 turn. Apply MIL-T-5543 thread compound sparingly to remaining threads and tighten connections.

(6) Install new indicator disc in discharge indicator.
(7) Service oxygen system. (Refer to 12-10-00)
(8) Leak check all connections using Sherlock Leak Detector Compound.
(9) Close and secure dorsal access door.



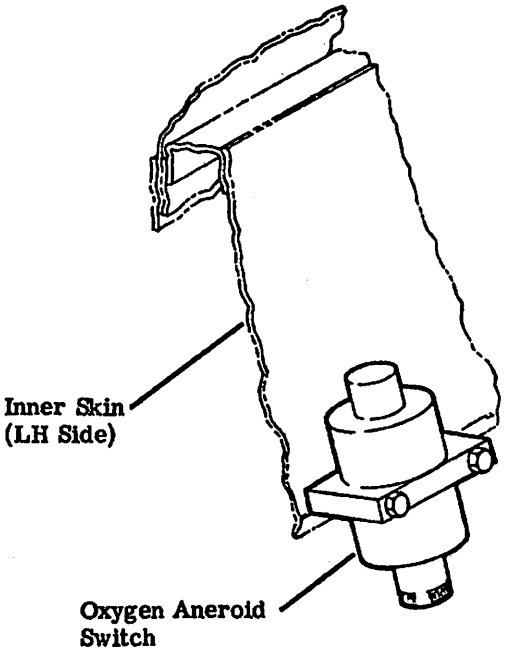
Burst Disc Replacement
Figure 201

ANEROID SWITCH - MAINTENANCE PRACTICES

1. General
 A. The aneroid switch, located on the left inner skin forward of the instrument panel, is installed in the pressurized portion of the cabin.

2. Description
 A. The switch senses cabin pressure and applies an open signal to the solenoid shutoff valve when cabin pressure is equivalent to an altitude of 14,000 (±750) feet.

3. Removal/Installation
 A. Remove Aneroid Switch (See figure 201)
 (1) Assure that Battery and Stall Warning Switches are off.
 (2) Lower pilot's instrument panel.
 (3) Disconnect electrical plug from aneroid switch.
 (4) Loosen attaching parts and remove aneroid switch from aircraft.
 B. Install Aneroid Switch (See figure 201)
 (1) Install aneroid switch and secure with attaching parts.
 (2) Connect electrical plug to aneroid switch.
 (3) Raise and secure pilot's instrument panel.



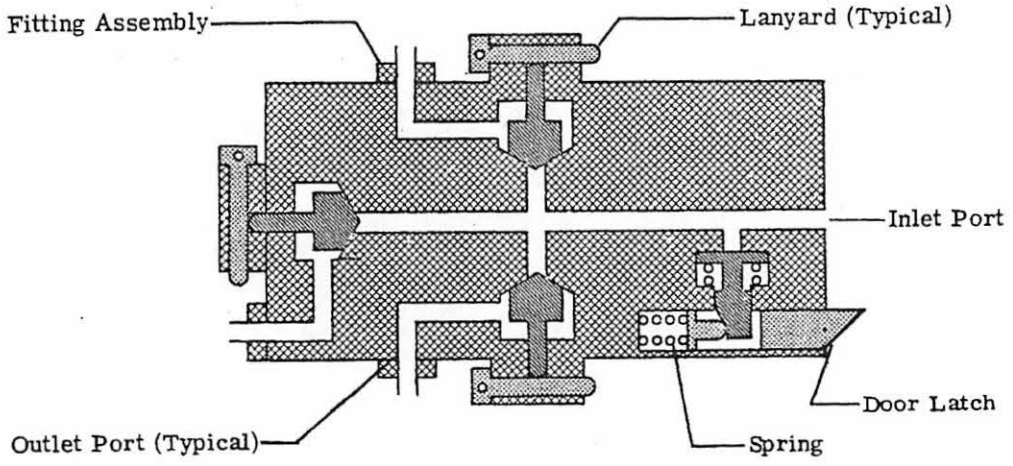
Aneroid Switch Installation
Figure 201

LANYARD ACTUATOR VALVE - MAINTENANCE PRACTICES

1. General
 A. A lanyard actuator valve is installed in each oxygen storage compartment.

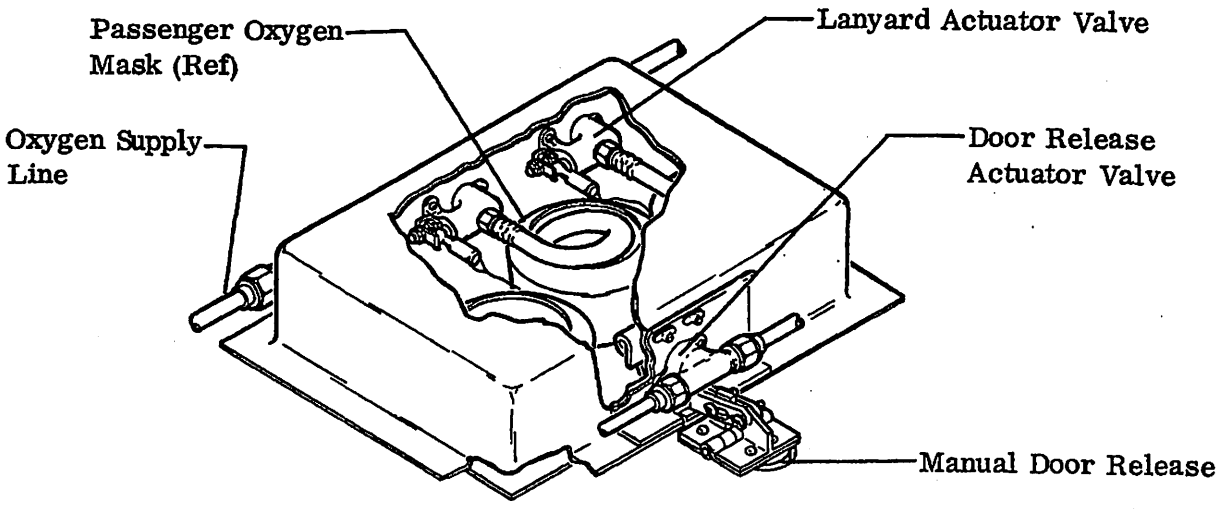
2. Description
 A. On Aircraft 25-061, -070 thru -182, a lanyard actuator valve is installed for each mask installed in the mask storage compartment. The actuator valve incorporates a spring loaded plunger which is held in the closed position by a lanyard. Pulling the lanyard allows the plunger to open and oxygen to flow to the mask.
 B. On Aircraft 25-183 and Subsequent, the lanyard actuator valve (figure 201) incorporates one inlet port, three outlet ports, and a spring loaded pressure actuated latch. The latch is used to hold the storage compartment door in place. The inlet port is connected to the main oxygen system line. The outlet ports have a fitting assembly installed to which the passenger mask supply lines are connected.

3. Removal/Installation
 A. Remove Lanyard Actuator Valve (See figure 202)
 (1) Lower upper center panel sufficiently to gain access to the storage compartment.
 (2) Disconnect oxygen line from tee. Cap exposed lines.
 (3) Remove tee from storage compartment.
 (4) Release storage compartment door and disconnect oxygen mask from valve.
 (5) Remove attaching parts and valve from storage compartment.

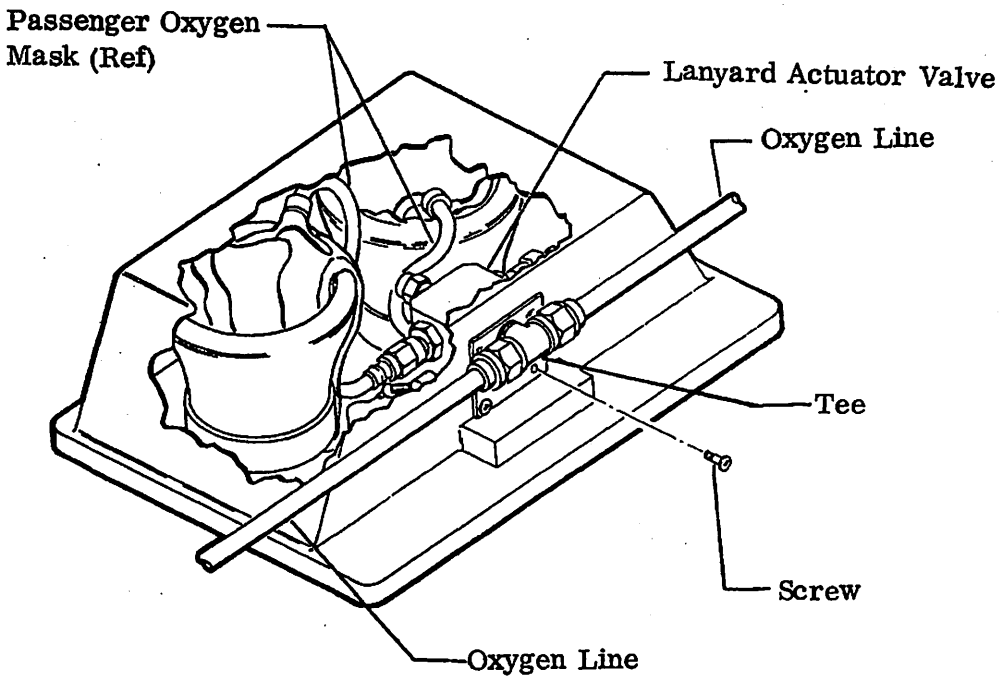


Lanyard Actuator Valve Schematic
Figure 201

B. Install Lanyard Actuator Valve (See figure 202)
 (1) Install valve and secure with attaching parts.
 (2) Connect oxygen mask supply lines to outlet port.
 (3) Install mask and door in storage compartment.
 (4) Install tee on storage compartment.
 (5) Connect oxygen lines to tee.
 (6) Install upper center panel and secure.



Aircraft 25-061, -070 thru -182



Aircraft 25-183 and Subsequent

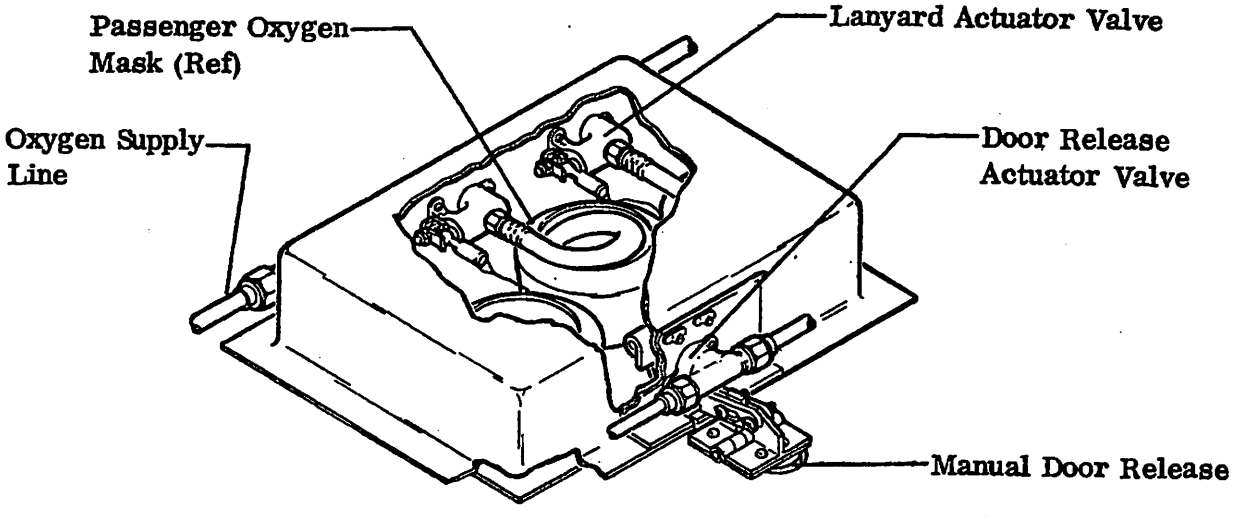
Lanyard Actuator Valve Installation
Figure 202

DOOR ACTUATOR VALVE - MAINTENANCE PRACTICES

1. General
 A. Each oxygen mask storage compartment incorporates a door actuator valve. The actuator valve is actuated when oxygen pressure is applied to the passenger distribution system.
 B. The actuator valves can be manually overridden at anytime.
 C. On Aircraft 25-183 and Subsequent, the door actuator is incorporated into the lanyard actuator valve.

2. Description
 A. Under normal conditions, the door actuator valves maintain the passenger mask storage compartment doors in the up-and-locked positions. The valves are connected to the passenger distribution system by a common 1/4-inch line. When oxygen pressure is supplied to the passenger distribution system, the valve plungers extend, allowing the doors to swing open. The door release valves do not incorporate bleed orifices. Should a condition arise where the doors opened and no passenger oxygen was utilized, one of the lanyards should be pulled to bleed oxygen pressure from the distribution system. The valve plungers will retract and the doors may be stowed in the up-and-locked position.

3. Removal/Installation
 A. Remove Door Actuator Valve (See figure 201)
 (1) Lower upper center panel sufficiently to gain access to the storage compartment.
 (2) Disconnect oxygen line from tee. Cap exposed lines.
 (3) Remove tee from storage compartment.
 (4) Release storage compartment door.
 (5) Remove attaching parts and door actuator valve from storage compartment.
 B. Install Door Actuator Valve (See figure 201)
 (1) Install valve and secure with attaching parts.
 (2) Install mask and door in storage compartment.
 (3) Install tee on storage compartment.
 (4) Connect oxygen lines to tee.
 (5) Install upper center panel and secure.



Door Actuator Valve Installation
Figure 201